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ABORTION

AND ITS TREATMENT, FROM THE STAND-POINT OF PRACTICAL EXPERIENCE

A SPECIAL COURSE OF LECTURES DELIVERED AT
THE COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK
SESSION OF 1889-'90

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REVISED BY THE AUTHOR



NEW YORK
D. APPLETON AND COMPANY

1890
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ABORTION AND ITS TREATMENT.

LECTURE I.

Vagueness and diversity of opinion in reference to the subject—

The views here expressed based on practical experience—

The importance of the uterus in the female economy—Im-

pregnation and conception—The development of the em-

bro—Formation of the placenta—Definition of abortion—

Distinction between abortion, miscarriage, and premature

labor—The natural history of abortion—Differences in the

way abortion may occur and the necessity of treating each

case according to its individual character and circum-

stances.

GENTLEMEN : I have selected abortion as the subject for this special course of lectures, and I shall treat it entirely from a practical point of view. I have chosen this topic for the reason that, as I look back over my experience in the medical profession—a career of now more than thirty-five years—I recall nothing which in times past has caused me more anxiety and

doubt, or in regard to which I have found it more difficult to get any satisfactory rules from books, than the treatment of abortion. When you come to look for absolute rules in the various authorities on obstetrics, you will find a great deal of uncertainty and diversity of opinion. Only recently a discussion took place on this subject in a public society in this country ; and here, again, in reading the reports of it published in the medical journals, one is at once struck with the want of unanimity among the different participants.

I want you to understand clearly that in these lectures I am not going to give you the opinions of the latest authorities in Vienna, London, or Paris, but that I will impart to you all that a thirty-five years' practice has taught me about abortion. To give the results derived from such a practical experience is, as I conceive, and as I have often had occasion to remark in my lectures, the most useful kind of teaching, as such instruction will enable the pupil to commence in his practice at the point

where his teacher left off. There is a vast difference between *learning* and *being taught* a thing. If you have to learn anything from your own experience, it may take you a long time and involve a waste of much honest effort; but if you are taught it at the beginning by one who has thoroughly studied the subject and had much personal experience in regard to it, you can readily perceive at how great an advantage this places you.

The uterus is a most extraordinary part of the female economy. It is the organ which divides one sex from the other. This organ has three entirely distinct and different periods of existence. From birth to the age of thirteen, or puberty, it is undeveloped and unimportant. From thirteen to fifty its career is one of intense activity, and it has a marked influence upon the whole being of the woman. From the age of about fifty to the close of life it sinks into insignificance again, and becomes an atrophied and unimportant organ—of no use whatever.

one particular spot, the exuberant mucous membrane goes on growing about it until it entirely surrounds it, and this enveloping membrane is still known by the old name *decidua reflexa*. You have all seen the bark of an oak growing over and covering a nail driven into the tree. Thus it is with the ovum and the uterine mucous membrane.

In a little while the allantois is developed, and from the foetal body, which has no connection with the decidua vera and decidua reflexa, two distinct membranes are formed—the amnion and the chorion. The latter attaches itself to the uterus by little rootlets which extend into the uterine glands, while the amnion is merely a membrane which secretes a clear fluid known as the *liquor amnii*. The foetal ball is everywhere attached to the uterine walls, and it gets its nourishment from the carpet-like surface of the uterus. By endosmosis the nutrient materials in the blood of the mother are taken into the circulation of the foetus; and not only does the chorion take nutriment from the mother's

occurrence a communication is set up through the nervous system, while the whole economy of the woman begins to change. In the uterus the muscular fibres commence to grow, and the mucous membrane undergoes rapid development. Formerly many authorities held that the non-pregnant uterus had no mucous membrane; but the microscopic researches of recent times have demonstrated its existence.

I do not propose to give you a disquisition on generation and embryology; but there are a few essential points with which it is quite necessary that you should be familiar if you wish to comprehend the subject of abortion. After conception has taken place the whole of the mucous membrane becomes thickened, forming the *decidua vera*, while a portion of it grows upward around the ovum. In olden times it was supposed that the latter was a false membrane, but more careful investigations proved that this was not the case, and that it was merely a hyperplasia of the membrane in this part. The ovum having attached itself to

one particular spot, the exuberant mucous membrane goes on growing about it until it entirely surrounds it, and this enveloping membrane is still known by the old name *decidua reflexa*. You have all seen the bark of an oak growing over and covering a nail driven into the tree. Thus it is with the ovum and the uterine mucous membrane.

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blood, but it will also take poisons or whatever else happens to be circulating in it. Thus, the foetus may be fatally affected by the hypodermic injection of morphine or other poisons into the mother's body.

The foetus is nourished in this way until the end of the second month, when a change takes place. The placenta begins to form; and this is a vital point in the subject of these lectures. Up to two and a half months there is no placenta, so far as abortion is concerned. Between two and a half and three and a half months the chorion loses all its tufts except at one point. Here it becomes excessively vascular and increased in thickness, and this thickened portion, with the thickened decidua, forms the placenta. The rest of the chorion becomes bald, but is still lightly attached to the decidua reflexa. From the third month the placenta is the all-important element as regards abortion.

Abortion is to be defined as the premature casting off of the product of conception before

the end of the fourth month. After the end of the fourth month the physiological conditions present are materially different. The term premature labor can not be applied to expulsion of the fœtus as early as the fifth month. Authorities do not agree as to how it is best to designate such cases occurring between the fourth and seventh months. I know of no better term for them than miscarriage. After the end of the sixth month we style it premature labor, because there is a possibility of the viability of the fœtus. I would say incidentally that I often induce premature labor, and I regard it as a procedure of the greatest possible importance. With the experience which we now have, it can only be regarded as trifling with a woman's life to allow her to go to full term in cases of aggravated albuminuria from puerperal nephritis, and also in many cases of placenta prævia.

In abortion we have the expulsion of the product of conception before the end of the fourth month, in miscarriage between the end

of the fourth month and the end of the sixth month, and in premature labor between the end of the sixth and the end of the ninth month. A labor is not regarded as strictly premature, however, which occurs within two weeks of the normal termination of gestation. On account of the difference in the physiological conditions at these several periods, as I have said, the rules of treatment are also entirely different. For example, while it is perfectly proper to use the tampon in the earlier months of pregnancy, such a procedure might be followed by the most serious consequences during the sixth month.

We come now to consider the pathology and natural history of abortion. When this accident occurs, one of several things may take place. First, there may be a complete emptying of the uterine cavity. A woman makes some unusual exertion or becomes suddenly alarmed from some cause or other, and immediately there is a violent and instantaneous contraction of the uterus, which forthwith expels

its entire contents—the decidua vera, the decidua reflexa, the amnion, the chorion, and the foetus. Should death ensue (which is not at all likely under ordinary circumstances), the internal surface of the uterus would be found on examination to look very much like raw flesh, and no membranes or anything else would be discovered in its cavity. If you will split open such a foetal shell, which is only met with in the very early stages of pregnancy and is often incorrectly called a “mole,” you will find that it has very thick walls and that in its central cavity there is a small amount of liquor amnii and a very small foetus.

In the second place, the foetus may be expelled with the amnion and chorion, while the decidua vera is left in the uterus. Whether the decidua reflexa is expelled with the foetus or not we can not say, though this is probably the case. In any event, however, this is of very little consequence, as the membrane is very thin and of no importance. The important point in this class of cases is that

the lining membrane of the uterus is not ripped away, as in the preceding. This membrane will come away later in the lochial discharge.

Thirdly, the fœtus alone may be expelled. The liquor amnii follows the fœtus, which (the delicate umbilical cord being severed) makes its way through the amnion and chorion, which remain *in situ* in the uterus. This is a complicated case. Very often the physician is not consulted until three or four days after the expulsion of the fœtus, and he is then informed of the event and told that everything is satisfactory. He probably finds the patient perfectly comfortable, with a pulse of 80 and a temperature of $98\frac{1}{2}^{\circ}$, and she and her friends are likely to strenuously object to any interference on his part. Under these circumstances what is he to do? It is certainly a very trying position; but if he does not insist on emptying the uterus of the contents still remaining in it, the chances are that he may again be summoned, to find that the woman has had a violent chill and is

now in a high fever, with all the signs of putrid intoxication or septicæmia.

Fourthly and lastly, when utero-gestation is a little further advanced, the fœtus and membranes may be expelled and the placenta left behind. In such a case the practitioner is apt to console himself with the idea that everything has come away, and that consequently there will be no further trouble. A retained placenta is sometimes difficult of removal, and you may perhaps give yourself the benefit of the doubt as to whether there is anything more in the uterus, and run the chances of escaping evil, even if the placenta does remain. Unfortunately, in a large proportion of cases the most serious results will follow if the placenta is allowed to remain. A day or two ago I consulted a certain author in regard to the prognosis of abortion, and I found that he pictured it in a very rose-colored way, stating that there was but little danger of a fatal issue, and that the mortality was very small. The facts of the case I believe to be directly the opposite of this.

There can be no question whatever that a large number of deaths occur which are directly or indirectly due to abortion, but which are set down to other causes. The principal lesson which I would have you learn to-day is, then, that abortion does not always occur in the same way, and that the physician must be fully prepared to treat each case according to its character and the special circumstances attending it.

LECTURE II.

The causes of abortion—Maternal causes—Poisons in the blood—Nervous disorders—Reflex influences—Drugs—Fœtal causes—Compression of the umbilical cord—Syphilis—Rupture of umbilical vein—Injury to fœtus from external causes—Uterine causes—Retroflexion and other displacements—Fibroids and other neoplasms—Laceration of the cervix—Habitual abortion—The modus operandi of the causes of abortion—Physiological abortion and the folly of interfering with it—The use of ergot.

IN the last lecture, you will remember that I gave you the technical definition of abortion. I now wish to ask, and answer the question of its meaning from a different standpoint—viz., from that of its natural history. From this standpoint what is the definition of abortion? You must understand that an abortion may take place at any time between the moment of fixation of the ovum and the end of the fourth month, and that anything whatever which causes the uterine body to contract and to overcome

the sphincteric action of the cervix uteri, and thus causes the emptying of the contents of the uterine cavity, constitutes this process.

Let us consider now what the causes of abortion are. And here let me say that I give you these causes not for the examination-room, but for the bedside. I do not propose by any means to enumerate all the causes. To do so would probably take up our entire hour; and I have always held that the didactic lecture ought never to take the place of the text-book for the student. What you ought to learn from lectures like these is the *method* of studying a subject. All the minute details of that subject you can derive from private reading, for all the minutiae in any department of medical science are elaborately set forth in the systematic works at your disposal.

Now, suppose that a woman applies to you for advice who tells you that she has been married eight or ten years, and in that time has had a dozen abortions, and that these abortions have always occurred about the end of the third

month. Or, suppose that you are consulted by a woman who tells you that she has been married twenty years, that nineteen years ago she gave birth, after a perfectly natural labor, to a well-developed and healthy child, and that since then she has never borne a child, but has had a considerable number of abortions—always at the third or fourth month. The problem that is presented to you is to find out what has been the cause of the habitual abortions in these cases; and what I want to do now is to tell you, as far as I am able, how to look for the cause of the trouble in such instances. It must be borne in mind, however, that a considerable number of cases are met with in practice in which, notwithstanding the fact that the cause of the abortions can be determined with positiveness, it is utterly beyond the power of the physician to prevent their occurrence; and, furthermore, that in many instances no assignable cause for the abortions can be discovered. But if the points to which I am about to direct your attention are fully impressed upon your minds, I can assure

you that, as you gain experience, the number of this latter class of cases which you meet with will grow steadily smaller.

All the causes of abortion can be divided into three classes :

I. Systemic, or those due to a general maternal condition.

II. Fœtal.

III. Uterine.

These three classes of causes, as a rule, are entirely independent of each other.

Let us suppose that, in the case of a woman who has had a number of abortions, the fœtus and its envelopes have been carefully examined in every instance, and have been found perfectly normal. It is evident that disease of the fœtus has had nothing to do with the causation of the accident, and that there must be something wrong about either the uterus or the general system of the mother. As a rule, however, you will not be able to secure definite information in regard to the condition of the fœtus in the different abortions without a long and careful

investigation, as it is likely to be the case that the woman has been attended by several different physicians at these times. Hence it will be best first to make a thorough examination of the general system of the patient, and then, if you find nothing about that to account for the trouble, communicate with any of the physicians who have attended her in her abortions who can be reached, and learn, if possible, whether in any instance a microscopic examination was made of the product of conception, and, if so, whether evidences of syphilis, or other disease likely to bring about foetal death, were found to be present.

I will now proceed to give you more in detail the causes which come under each of these three heads. Among the systemic causes, a number are connected with the nervous system and a number with the blood; and I will speak first of the latter. It is well known that carbonic-oxide gas has a more certain effect in exciting uterine contractions than ergot itself. It is related that some years ago when Mar-

shal Pélissier, at the head of a French army, was waging a war of conquest in a certain district of Algiers, he drove an Arab tribe into a large cave, where they had secreted their valuables, and kept them imprisoned there for some days. When the people were finally released, it was found that quite a large number of the pregnant women of the party had aborted, this result being unquestionably due to the poisoning of their blood by the carbonic-oxide gas which had been generated from the crowding together within confined quarters of so many human beings. It is a curious fact, also, that this poison sometimes has the effect of causing the post-mortem delivery of pregnant women, and I myself have had the opportunity of observing two such instances, the mothers in both of them being nearly at full term. In such instances, which never occur until some hours after death, the carbonic-oxide gas which produces the uterine contractions is given off from the decaying tissues.

Among other poisons in the blood which are

capable of causing abortion are those which create the exanthematous eruptions of small-pox, scarlatina, measles, etc. ; and you will occasionally find that unusually severe malarial poisoning will give rise to it. A chill is nothing but a slight convulsion, and in very malarious districts the chill of the adult is often replaced by the convulsion in children, this sometimes being so severe as to destroy life. This malarial poisoning, I am convinced, is the cause of some of the cases of habitual abortion which are met with.

Next we will consider some of the nervous causes. Some women of highly nervous organization are liable to have abortion brought on by the most trivial causes. Indeed, a mere odor has been sometimes declared to produce this result. The nerves are more answerable for abortions than the blood ; and prominent among the nervous disorders which are apt to give rise to the accident may be mentioned chorea. Yet, notwithstanding this tendency in general, I have at times met with patients in whom the disease

did not cause abortion, but had such a profound effect upon the system otherwise that it was found necessary to produce abortion artificially in order to save their lives. Tetanus is even more liable than chorea to cause abortion. Then, again, the reflex influences may cause it; and one of the most common of these is sudden fright. I once met with the case of a lady in perfect health who, while on her way to this city on a railway train with her husband, fell asleep and was awakened in sudden terror by the entrance of the train into a tunnel. Instantly she felt a violent uterine pain, and during the following night she gave birth to a foetus. Under the placenta I found a clot of blood as large as a pigeon's egg, which was unquestionably the immediate cause of the abortion. The sudden fright acted primarily on the nervous centres, and the result was a severe spasm of the uterus which caused placental apoplexy. In consequence, the clot mentioned was formed, and the irritation of this clot, acting as a foreign body, gave rise to the contractions

which in a few hours resulted in the emptying of the uterus.

Again, there are, as you know, certain drugs—such as ergot, cotton-root, viscum album, and others which I need not enumerate—which have a specific action on the uterus and sometimes produce abortion. It is only necessary to state that ergot is the typical agent of this class.

When in any case of habitual abortion you have excluded those causes originating in the system of the mother, you will have to direct your attention to the foetus. As to the foetal causes of abortion, it may be stated as a general proposition that anything which will kill the foetus will produce an abortion. There are only two things which can happen to the dead foetus if it is not cast off. One of these is atheromatous or fatty degeneration, resulting in the so-called “mole,” or in that very rare and curious calcification known as uterine stone. But in the great majority of cases the decaying foetus, acting on the nerves of the uterus, produces contraction and expulsion.

During the later months of pregnancy the membranes and other appendages of the fœtus are constantly liable to get out of order, and, by reason of sudden movements of the fœtus, the umbilical cord is especially apt to become twisted or tied in a knot, occlusion of its vessels sometimes resulting in the death of the fœtus. I once knew of a woman who in the ninth month of pregnancy felt the child bound in her uterus. She very soon became ill, and suffered greatly until she was delivered at full term. It was then found that there were two children *in utero*, one of which was in a perfectly healthy condition, though it was still-born, while the body of the other was so swollen and emphysematous that it had to be removed piecemeal. This putrefaction had come on during the two weeks that the fœtus (which had no doubt been killed by the knotting of the cord resulting from its violent movement) had remained dead in the uterus. The mother unfortunately died of septicæmia after the labor. Of course, the umbilical cord is not liable to get into a knot in the

earlier months of pregnancy; but injury to it may occur as early as the fourth month.

Syphilis is one of the two most frequent causes of habitual abortion. It may be derived from the father or mother, or from both parents, and it affects not only the child, but the membranes, causing fatty degeneration of the placenta, and thus interfering with the aëration of the blood supplied to the fœtus.

Finally, I should mention one other cause, and that is injury to the fœtus from external influences. As an illustration of this I will refer to the case of a lady who, while walking across her bed-chamber in the dark, ran against the corner of a table, striking her abdomen, though not with any great force. She thought nothing more of this occurrence, but in two weeks after it she had an abortion, and an examination of the fœtus, which was not quite four months old, showed that it had been struck upon the spine by the blow referred to. This was unquestionably the cause of its death and the resulting abortion. A case like this shows

with what care in abortion we must go over the possible causes of the accident.

Now for the uterine causes. The second of the two grand factors in causing abortion of which I spoke (the first being syphilis) is retroflexion of the uterus. As to the time when abortions usually take place, it is a well-established fact, about which there can be no possible doubt, that a large proportion of all abortions occur about the end of the third month. Hence, if you have a patient who has been subject to abortion, you should by all means keep her strictly quiet at this particular time. Why, you may ask, are abortions so especially liable to come at this time? There are several reasons for this. In the first place, this is the third menstrual period, when the nutrition of the foetus is changing its character; secondly, the placenta is now rapidly developing; and, thirdly, the uterus is beginning to rise out of the pelvis. It is the time, moreover, when syphilis, if present, affects the placenta, and when retroflexion is most apt to be attended

they are exceedingly common, and, as I have already pointed out, this condition and syphilis constitute the two grand factors in the production of habitual abortion. The special reason why retroflexion so often leads to abortion is the marked vascular engorgement which is incident to this form of displacement.

As to the method in which the various causes act, in the case of the accumulation of carbonic-oxygen gas in the blood the action is directly upon the uterus itself, as shown by the fact that it is capable of causing post-mortem delivery; but, as a rule, the *modus operandi* of these causes is through the nervous system.

Let us suppose that the command goes forth from the nervous centres that the fundus uteri shall contract. In the normal condition the sphincteric action of the cervix resists the pressure of the uterine body from above; but as the latter, under the influence of the nervous system, goes on contracting, this resistance will gradually be overcome. At first the woman ex-

periences bearing-down pains (as they have been very properly designated) at long intervals, but later they occur at short ones. The *os*, acted upon by two forces, begins to dilate. The first of these forces consists of the plug-like action of the foetal ball, and the second is the influence of the nervous system. In a little while the *os internum* opens, and then the whole canal does so, while the membranes begin gradually to detach themselves. If the placenta is formed, that also becomes slightly detached, and the woman begins to bleed—often to an alarming and sometimes to a fatal extent.

The uterus goes on forcing down its contents, and at length a plug gets fully into the cervical canal, this plug very rarely comprising the whole foetal shell, or consisting, as is the very general rule, of the membranes enveloping the foetus, without the *decidua vera*. Here let me say a word in regard to the old adage, “meddlesome midwifery is bad.” There can be no question that this quotation is sometimes used

as a cloak for ignorance; but at the same time it is true that meddling midwifery, properly so called, is just as bad now as it was in the days of Hippocrates. The process of expulsion just described constitutes the natural history of abortion; *therefore interfere with it as little as possible.*

This is a maxim which it is very difficult for the young practitioner to respect! There is a great temptation to remove the foetus; but if you do this the chances are that the membranes will be left, and if this be the case they are likely to cause you many a sleepless night before all the consequences of your ill-timed interference are over. But you may perhaps say, "Why, the woman is bleeding to a dangerous degree." If the hæmorrhage is really alarming, it is certainly your duty to control that at all events; but as to the pain that the woman is suffering, it is better that she should have this pain than that the uterine contractions should be interfered with by the use of opium or other drugs. Opium is often a price-

less boon in parturition, but it must always be used with the greatest discrimination.

After the cervix is sufficiently dilated to admit the greatest diameter of the foetal shell, the entire contents of the uterine cavity can readily come away, and there is likely to be no further trouble. Everything has gone well because it has been a physiological process. It is of the greatest importance that the labor-pains should duly perform their function. Anything which breaks the bag of water and lets out the *liquor amnii* is a misfortune, and anything which separates the foetus from the membranes is a still greater misfortune. During an abortion the attitude of the physician, beyond the control of hæmorrhage, should be an expectant one. He should let the process take its natural course and only offer his assistance, as he would apply the forceps in labor at full term, when Nature is unable to complete the delivery.

Some of you would perhaps like to ask me whether I would not use ergot under these circumstances. Ergot is indeed excellent in its

place, but it often does a great deal of harm. Both in labor and in abortion it should be withheld until there is no decided obstruction to delivery; but, when this is the case, one full dose may often be given in the later stages with the most satisfactory results. If it is given in abortion, this should be only when the cervix has become sufficiently dilated to admit the maximum part of the foetal shell.

LECTURE III.

The habit of abortion—Exceptions to the ordinary rules governing abortion—Criminal abortion—Retention of the product of conception under extraordinary circumstances—The absurdity of so-called maternal impressions—Great frequency of abortion—Prognosis in abortion—As to life—As to health—Elements of danger in abortion—Hæmorrhage—Putrid intoxication—Septicæmia and peritonitis—Suppurative arthritis—Cellulitis and abscess—Embolism—Tetanus—Uterine hydatids—Melancholia.

ONE word further in regard to syphilis, which, as I said before, constitutes, with the exception of retroflexion of the uterus, the most important factor in the production of habitual abortion. In order to discover its existence you should make a careful examination of the product of conception after it is cast off, as well as of both parents. In many instances the evidences of the disease are sufficiently plain to the naked eye either in the foetus itself or in the secundines. In others it is necessary to

make a microscopical examination to ascertain the existence of the disease.

Before I leave entirely the subject of causation, I wish to speak for a moment of the *habit* of abortion. You will understand, I trust, that this unscientific designation is only applied to a certain class of cases for which we have no better term. In every case of abortion there is, of course, a definite cause; but sometimes this cause is so obscure or so slight as to entirely escape notice. There are many delicate refined women of nervous temperament in whom the mere hearing of something unpleasant or repulsive will excite nausea and vomiting, because their nervous systems are thoroughly hyperæsthetic, and in this class of cases the slightest cause is often sufficient to induce an abortion. Such women are so constituted as to their nervous systems that it takes very little to make the uterus bear down on its contents and expel them. It is very difficult for a woman of this kind, even under the most favorable circumstances, to go to full term without encounter-

ing some occurrence that will give rise to a premature expulsion of the product of conception. This, then, is what I refer to as the habit of abortion, and the expression is resorted to only after we are driven to the wall, as it were; every other cause for the accident having been carefully excluded.

I now ask you to consider some exceptions to the ordinary rules governing abortion. There are some women who are just the opposite of those in whom we find the extreme facility of abortion which has just been referred to; they are so hardy that it is exceedingly difficult for them to get rid of the contents of the uterus before the normal termination of pregnancy. Incidentally I may here remark that the practice of criminal abortion is common in this country, and women often perform it on themselves. They often learn how to introduce the sound into the uterus themselves, and, having done so, they move it about from side to side until they excite the organ to contraction; and when the process of abortion begins they take

drugs, of which they have read in books, to facilitate the expulsion of the troublesome product of conception. With many women, you must understand, abortion is not regarded as a *great* crime, and they are, unfortunately, prone to condone it.

In this connection,* let me give you a remarkable case which occurred in my own experience. On one occasion, a few years ago, I was sitting at breakfast, when the servant announced that there was a gentleman down-stairs asking to see me who seemed to be crazy. I accordingly went down, and found a fine-looking man about thirty-five years of age who was walking the floor and appeared to be in a perfect agony of anxiety and excitement. He told me that he was a physician from a western town, and that he had come on with his wife who had injured herself in an attempt to produce an abortion. He stated that his wife, believing herself to be pregnant, had become so alarmed, from the fact

* This case, at the time of its occurrence, was published in detail in the American Journal of the Medical Sciences.—P. B. P.

that at her last confinement she had suffered severely from puerperal fever, and that she had insisted on getting rid of the product of conception by artificial means herself. Accordingly, wishing to humor her, he had procured and prepared for her an iron umbrella-rib, telling her that if she would introduce it into the uterus her purpose would be accomplished. In his absence she had attempted this procedure, and found that the rib, having once been pushed in, kept going on and on, until at last it was suddenly grasped by something and pulled up entirely out of her reach, disappearing within the uterus. In answer to my inquiry how long his wife had been pregnant, he replied "two months."

Though this story seemed utterly improbable, I at once went to see his wife at her hotel, and found a very handsome woman lying in bed apparently in a perfectly healthy condition. Her pulse and temperature were normal, and she stated that she suffered no pain whatever, and that the only thing of which she complained

was a slight cough. Under the circumstances I thought it best to make an examination of her chest, and asked her to sit up in bed for this purpose. As soon as she did this she gave a sudden gasp, as though she were in great agony, and she suffered so greatly from difficulty of breathing that it was five minutes before I could go on with the examination.

I then believed that the history told by her husband was true, and, fearing that the most serious consequences might ensue, I determined to perform laparotomy at once. Every preparation was accordingly made for the operation, but just as the ether cone was about to be applied to her face an uncle of hers, who was present, remarked to me that if I proceeded it must be on my own responsibility, and that if anything untoward happened he would invoke the law to punish me for my temerity. This announcement somewhat startled me, and, as I had undertaken the case merely to help a fellow-practitioner who was in sore distress, I asked the patient if she would take the risk

of the operation, and she said "no." I then asked her if it was really true that she had used the umbrella-rib and it had disappeared, as stated, and she replied that "she didn't know." In such a state of affairs I felt that it would be utterly unjustifiable for me to go on with the laparotomy, and I accordingly ordered that the instruments which had been made ready should be put up. In a week after this the woman died.

The husband utterly refused to have an autopsy made; but, as I was unwilling to give a certificate of death without learning something more about this obscure case, I insisted on placing it in the coroner's hands, and was thus enabled to obtain a post-mortem examination. The result of the examination was as follows: I found a non-pregnant uterus of normal size, and just to the right of the cervix uteri there was a puncture of the vaginal wall, evidently made by the umbrella-rib mentioned. Through this orifice the rib had gone, and as it passed upward through the abdominal cavity it had

scraped the surface of the liver. After transfixing the diaphragm, it penetrated the right lung to the extent of two or three inches, and in this position it was found at the autopsy. It was no doubt a spasm of the diaphragm, resulting from the irritation of the rib piercing it, which had caused the sudden snatching upward of the latter, as described by the husband in his narrative.

The rib was thirteen inches in length, with its point somewhat sharpened, and surrounding its upper extremity, in the lung tissue, there was an abscess, which had not as yet discharged, but from which septic influences had emanated. I mention this case not only on account of its peculiar interest, but to show you to what lengths women will go under these circumstances. In this instance it was the dread of another attack of puerperal fever which rendered the patient morbidly anxious about the matter.

But to return to those exceptional cases in which the product of conception is retained un-

der circumstances which, in the vast majority of instances, would at once result in its expulsion. In Paris pregnant young women who have attempted suicide by jumping into the Seine, and have been rescued, have been known to go on to full term without the slightest threatening of abortion, notwithstanding the tremendous shock and mental strain incident to such an adventure. There is a case related, by Mauriceau I think, in which a pregnant woman, excited by an alarm of fire, jumped from an upper window, and, breaking through a shed by the force of her descent, struck upon the stone flagging below. When she was picked up it was found that several of the bones of her body were broken, but, nevertheless, she passed on to full term as though nothing had happened.

Some years ago while a lady, whom I knew very well, was walking out one day in the woods with her husband, a huge black-snake sprang out apparently from the bushes and coiled itself several times around her neck, at the same time spattering her with blood. Her

young brother had killed the snake, and, concealing himself in the shrubbery, had intended to throw it down in the path before his sister, but missed his aim, with the result stated. The lady, who was at the fourth month of pregnancy, was so badly frightened that she was thrown into a state of hysterical syncope, from which she did not recover for hours, and for several days suffered from violent hysterical convulsions; so that she seemed almost at the point of death. Yet, notwithstanding this fearful shock to her nervous system, the uterus never showed the slightest tendency to contract, and her child was born at full term. Before its birth I was consulted as to whether I thought the infant would be marked as a result of the impression made upon the mind of the mother by this incident, and I replied that I felt absolutely sure that nothing of the kind was to be apprehended. The sequel proved that I was correct.

I have just received a note from one of you asking my view as to maternal impressions

upon the *fœtus in utero*. I believe that it is utterly impossible for a maternal impression to be stamped upon the body of the fœtus. The latter is to all intents and purposes outside of the mother's influence, and Virchow, the great microscopist, has never been able to detect distinct nerve connection between the two. Wherever there has occurred a case which has seemed to confirm the old idea of the child being affected in this way, it has been, I think, simply a coincidence; and the argument in favor of the agency of maternal impressions in producing such an effect is one of *post hoc*, not *propter hoc*.

What is the frequency of abortion? This is something which we do not know, and which, from the nature of the circumstances attending abortion, we can never find out with positiveness. Statistics have fallen into disrepute by being made to apply to things which can not be definitely ascertained. The premature casting off of the product of conception is often kept a secret, even when there is no criminal-

ity connected with the occurrence. But, though I can not give you any figures, I want to impress upon you the fact that abortion is exceedingly common. Nature seems to have ordained, not only among plants and the lower animals, but also in the human race, that the amount of generative material should be enormous, and also that a large proportion of it should be destroyed.

In the gynæcological clinics which I have held for many years in this college it has always been exceptional to find a woman coming before the class who could say that she had had eight or ten children and never had an abortion. In the upper walks of life also abortion is extremely common, but less so than in the lower.

In regard to the prognosis in abortion it is impossible to speak accurately, because reliable statistics are not attainable, and we can not say, therefore, what the percentage of deaths is. I would say, in general, however, that the prognosis is good, except in criminal cases and

in cases where antiseptic methods are neglected in the treatment. I am speaking now, you will understand, of the prognosis as to life. As to the matter of health I can not express the same opinion, for it is an unfortunate fact that vast numbers of women are invalided by abortion. Criminal abortions are usually performed by charlatans, in the roughest and most unscientific manner, and it is no wonder that the results are so frequently disastrous. When, however, abortion is artificially produced by the intelligent physician, in fulfillment of indications furnished by science, the prognosis is not bad.

If a woman dies during or after an abortion, what is it that kills her? In order to understand this we must, first of all, appreciate what is taking place. The foetal shell, consisting of decidua reflexa, chorion, amnion, and placenta (if the latter has been developed), has got to come out. The decidua vera is usually torn away in places. Let us inquire, therefore, what are the elements of danger, or the sequelæ of abortion.

The principal ones may be stated as follows :

1. Hæmorrhage.
2. Putrid intoxication.
3. Septicæmia and peritonitis.
4. Suppurative arthritis.
5. Cellulitis and abscess.
6. Embolism.
7. Air in the veins.
8. Tetanus.
9. Uterine hydatids.
10. Melancholia.

The first five of these conditions are common as sequelæ of abortion ; the last five are rare pathological curiosities.

Let us suppose that you check the hæmorrhage. Is the woman perfectly safe ? No. It may be that, even if the physiological process is not interfered with by the administration of opium or other sedatives, the uterus will not be able to expel its contents. In a short time putrefaction of the product of conception ensues, absorption from it takes place, and the patient suffers from what is known as putrid intoxica-

tion. The effect is the same as that which would be produced on any one by making an opening in the arm and inserting within it, so that it will come in contact with the tissues, a piece of flesh. As the latter undergoes putrefaction the whole system will become more or less infected, as indicated by headache, pains in the back and limbs, quickened pulse, high temperature, and a general feeling of *malaise*.

You will notice that I put septicæmia and peritonitis together under one head. I do this because, in my opinion, peritonitis following abortion never occurs as primary peritonitis, unless it is of traumatic origin—that is, unless the peritonæum has in some way been wounded. In other words, the peritonitis which follows abortion is, as a rule, septic in character. As to the origin of the septicæmia and peritonitis; the finger of the physician may convey to the parts the poison giving rise to the trouble without any influence from the secundines themselves. It is now just nine years ago since I had a very painful realization of how very small an amount of

such poison may cause the most serious results. Just after the opening of my private hospital I was one day performing an operation for the removal of a sloughing fibroid, and it was noticed by all present that the odor arising from the putrid mass was of the most disagreeable description. While I was washing my instruments after the completion of the operation I chanced to prick my little finger with the point of a tenaculum which had been used during the operation. This was before the days of bichloride in surgery ; but I at once sucked the wound thoroughly, and not only washed it with a carbolic-acid solution, but applied some pure carbolic acid to it. This was at 3 P. M. At 7 P. M. on the same day I had a slight chill, and by the next morning my finger was enormously swollen, while there rapidly followed enlargement of the lymphatic glands of the arm, and an abscess formed in the palm of the hand.

All this followed from the introduction of a minute portion of septic material into a part not very vascular or abundantly supplied with

nerves. Suppose that such an accident should occur in connection with a uterus enormously vascular and with its innervation exalted to the highest pitch, as is the case during pregnancy, and you can imagine what the result would be.

Now as to suppurative arthritis resulting from abortion. Some twenty years ago I had a lesson taught me which I never can forget. My friend Dr. Lewis A. Sayre, who was ill, asked me to see for him a patient who had recently had an abortion, and on visiting her I found the wrist, elbow, and ankle enlarged and painful from what seemed plainly to me to be acute articular rheumatism. About a week later I was asked by Dr. Sayre to see the same patient with him, and you can imagine my surprise and chagrin when I found an accumulation of pus in each of the joints named. Since then I have always been very suspicious of every case that seemed like acute articular rheumatism when the patient has recently had an abortion, and I would earnestly caution you to be on your guard in regard to such cases, for the trouble

1894

is much more likely to be suppurative arthritis than rheumatism. Such arthritis sometimes ends in death, but, fortunately, the patient just mentioned recovered. This case illustrates very well what I said to you in the first lecture of the difference between learning and being taught. Here I had to learn by my own experience what I ought to have been taught by my instructors.

I will not stop to speak particularly of cellulitis and abscess, but will pass on to the next element of danger. A certain number of cases of abortion end very curiously. You are suddenly called to a patient who has had an abortion, and find that she has all at once become hemiplegic, and that the cause of the trouble is embolism. In my large experience I have seen but two such cases.

The entrance of a small amount of air into the veins is not likely to prove very serious, but when air gets into the large sinuses which are found in connection with the pregnant uterus, a fatal result is very apt to occur. I know of a case of criminal abortion, which occurred

some years ago, in a town about thirty miles from New York, in which the patient died instantaneously of heart failure from this accident, the air being introduced through a hollow instrument which was used in bringing on the abortion.

Of tetanus resulting from retention of membranes in the uterus I have met with two instances in my experience. In such cases the trouble commences in the uterus (arising from putrid infection), and thence is transmitted to the nervous centres as an ascending neuritis.

Sometimes after an abortion a portion of membrane remains in the uterus, and if this consists of tufted chorion its villi are liable to undergo proliferative degeneration, with the result of the formation of what are known as uterine hydatids. With the multiplication of these hydatids the uterus goes on increasing in size until it attains nearly or quite the proportions of the organ at full term, and this condition leads to a great many errors in diagnosis.

There is only one more consequence of abor-

tion of which I will speak—viz., chronic melancholia—and this, like the last five conditions enumerated in my list, is very rare. This kind of melancholia will be found to run a course less severe, according to my experience, than that following labor at full term.

LECTURE IV.

Symptoms indicative of commencing abortion—Hæmorrhage—Pain—Vomiting—Methods of preventing an anticipated abortion—Nervous influences in the home-life of women—Syphilis—Retroflexion—Laceration of the cervix—Fibrous polypi—Large fibroids—Importance of rest in bed at menstrual period when a tendency to abortion is present—The habit of abortion—The treatment of abortion actually taking place—Rule for deciding whether or not to attempt to stop a commencing abortion—Methods of prevention—Importance of absolute rest and quiet—Use of opium, chloral, and bromides—The tampon.

LET us suppose that a patient has reason to fear that abortion is about to take place, and that you are summoned to attend her. What are the symptoms that will warn you that there is danger of the uterus expelling its contents? There are only three which are of real value and which are worthy of your especial consideration. They are the essential symptoms, and you need not pay attention to any others. The first of these is hæmorrhage, and not pain. This pre-

cedes pain, because the first contractions of the uterus are so slight that they do not give rise to any suffering, even although they are sufficient to detach some of the delicate connections between the foetal shell and the uterus.

The second essential symptom is pain. After the process has gone on for an hour or so the woman begins to feel an occasional bearing-down pain, and these pains increase in frequency and severity as the uterine contractions increase in force.

The third symptom to which I would call your attention is vomiting. This sign may, of course, be absent; but it is curious to notice how frequently it is present.

Now let us consider the methods of preventing an abortion which is anticipated; in other words, the manner of dealing with cases of habitual abortion. Perhaps the patient, without existing symptoms of abortion, will send for you and tell you that she is one month pregnant, and that she regrets this exceedingly, for the reason that she has had seven or eight

mishaps, one after the other, and has never given birth to a living child. Or she may inform you that she has been married ten years and had a child nine years ago, but since then only a number of successive abortions. These abortions have always occurred between the end of the second and the end of the fourth month, and she will very probably say that she has sent for you because she wants you to prevent a recurrence now. Or, again; a patient may state that she is not pregnant now, but that she has had a number of abortions, and would like you to find out before she becomes pregnant again what has been the cause of them, in order that she may prevent the next one that threatens.

In order to suggest to you how you are to deal with such cases as these I venture to recapitulate some of the points which have already been gone over in these lectures, begging your indulgence for my acquiescence in the belief of that French author who thinks that the essence of teaching is contained in "*répétition sans cesse*."

You should always begin by examining the woman very carefully as to her general system.

See if there be anything in her occupation or habits of life likely to induce abortion. In other words, try to find out whether the cause of the habitual abortions is maternal, and correct it if it be in your power to do so. If in any case you are not certain whether something that you may discover regarding the system of the mother is responsible for the trouble, give her the benefit of the doubt, and treat her as if it were.

While dealing with this part of our subject let me call your attention to the fact that there are many occult nervous influences in the home-life of women which are liable to have more or less effect in causing abortions. I have in my mind at this moment a refined and wealthy woman of this city who is surrounded by every luxury, but who, unfortunately, has a husband who is the slave of alcohol and opium, and, in consequence, her life has become almost unbearable from his brutality. There are hundreds of

influences of this kind which so disturb the nervous system of the mother that it is very difficult for her to go to full term. Cases of the kind of which I am now speaking, you will find, are exceedingly common.

If no maternal causes are to be found, you should next look for foetal causes. If you have not attended the patient in some of her abortions, communicate, if possible, with the physicians who treated her, and in this way you may discover what the trouble has been. If it is ascertained that in previous abortions the product of conception has shown evidences of syphilis, it will be your duty to treat the parent who is at fault, for this disease; and, if you can not make out which one of them is or has been syphilitic, to treat them both. After twelve or fifteen months of such antisymphilitic treatment you will find that there is a strong probability that the abortions may be avoided in the future.

If you discover neither a maternal nor a foetal cause, you must make a careful examination of the condition of the uterus. The uterine causes

of habitual abortion are, in fact, much more important than either the maternal (systemic) or the foetal. From the emphasis with which I have spoken of this condition, you will naturally look especially for retroflexion, and it is of importance to bear in mind that retroflexion may in certain cases exist just at the period of utero-gestation, when the abortions commonly occur, and at no other time. I was strongly impressed with this point very early in my obstetrical practice. I was called to attend a patient who had had nine abortions, and when she became pregnant again I found that the uterus was in a state of marked retroflexion at the end of the third month. I replaced the organ and kept it carefully in position, and the result was that she went to full term and was delivered of a living child. Moreover, she afterward had several other children.

The mere perfunctory putting in of a pessary will not be sufficient in these cases. You must replace the uterus, and keep it in position, for if you fail in this, the abortion will take place

as before. It is necessary to watch the uterus carefully every day until the critical period is over.

Among the uterine causes which I have previously mentioned is laceration of the cervix. Such lacerations, as you are perhaps aware, are capable sometimes of causing complete inversion of the non-pregnant uterus, though such an occurrence is very rare. If, then, this condition can produce such an effect upon the non-pregnant uterus, you can readily appreciate how great is the danger of its giving rise to abortion. In some cases, even a small fissure of the os may occasion so much reflex irritation that uterine contractions are set up and an abortion results.

Another uterine cause is fibrous polypi within the cavity. You may perhaps have noticed what a severe spasmodic cough is occasioned by the existence of a small polypus in the larynx. Indeed, wherever these growths are situated they are apt to set up a considerable amount of reflex irritation. I once had a patient in my private hospital who suffered from

the most violent spasm of the rectum. Before examining the parts I supposed that the trouble was probably due to a fissure of the anus; but when I made an examination I found that there was no fissure present, but that just within the anus there was a little fibrous polypus. I removed this, and the patient never had another rectal spasm. In the same way a polypus will act upon the pregnant uterus.

Large fibroid tumors, however, whether sub-mucous or interstitial, are still more likely to cause abortion, because they exert more pressure and interfere with the innervation of the organ.

Here let me impress one point especially upon you. If a woman abort at all, in the vast majority of instances the accident will occur coincidentally with the menstrual epoch. If, therefore, you have a patient under your care who has shown marked tendency to abort, you should always keep her strictly in bed for twelve days out of every month—viz., four days before the menstrual period, four days during the period,

and four days after it. The most perfect rest of both mind and body should be secured ; and she should be carefully shielded against all disturbing influences. Even when the active cause of previous abortions has been discovered and removed, a certain influence from this may remain for a considerable length of time.

I regard confinement to bed as one of the most important remedies at the command of the intelligent physician in these cases.

When in any given case you have excluded all maternal, foetal, and uterine causes, you will be forced to fall back upon what I have spoken to you of as the habit of abortion to explain the difficulty. This class of cases seems, as far as we are able to judge, to be due to a hyperæsthetic condition of the uterine system of nerves ; and that is all that we know about the matter. The diagnosis is, of course, an empirical one, but, under the circumstances, we can do no better. When you meet with a patient of this kind wait till pregnancy has advanced to the end of the sixth week, and then keep her in bed until

the fifth month. In very many cases you will find that this plan will be successful. The uterus is unable to perform its functions, and therefore you must give it rest, just as you would the other organs under similar circumstances.

You will be surprised to see what good results will often follow this empirical treatment.

I come now to the treatment of abortion actually in progress. We will suppose that it is just after the third menstrual period in uterogestation, and that the process of abortion has commenced. You find the patient in bed, and she probably tells you that after taking a walk or ride (during which she made no unusual exertion) she felt a sensation of moisture, and, on making an examination, found that she was bleeding freely. At the present time she is occasionally having a slight pain.

What is to be done under these circumstances? You at once ask yourself the question, "Am I to try to prevent this abortion from taking place, or should I endeavor to facilitate the

process?" This is the question to be decided, and the decision must be made at once, for the line of treatment adopted in the one case will, of course, be radically different from that applicable to the other.

Let me offer you a rule for the decision of this important point. Do not allow yourself to be persuaded that the amount of blood lost shall be your guide. It may be that you will find the hæmorrhage somewhat alarming, and the patient already showing the usual signs denoting a severe loss of blood. But on this account do not conclude that the completion of the process of abortion is inevitable.

Here let me digress for a moment to say that it is possible that the patient may be unwilling to submit to a vaginal examination. If this be the case, take the husband quietly aside and tell him that such an examination is absolutely necessary for the successful management of the case, and that if it be refused the responsibility for the result will be shifted from your shoulders to his. I have never known an in-

stance where an examination was not willingly permitted after the matter had thus been fully explained.

Now for the rule of which I just now spoke. If the os uteri be dilated to such an extent that you can pass your finger through it and touch the presenting foetal ball, do not fritter away your own and the patient's time by trying to stop the process of expulsion. Such an attempt will almost surely be useless. If, however, the os be not so dilated, it will be your duty to try to stop the abortion. This is a perfectly valid rule, because the first stage of abortion is dilatation of the cervix, and if that is over there is little chance of prevention.

Next let us consider the methods of prevention. Very often the woman is told to go to bed, a full dose of opium is ordered, and a bag of ice is placed over the fundus uteri, for what reason I do not know. The physician may or may not apply a tampon, as he sees fit, and then he goes home. He leaves no directions that the light shall be excluded from the apart-

ment or that the children, servants, or friends of the patient shall not have free access to her. In three hours, perhaps, he comes back "to observe the progress of the case."

I do not regard this as an efficient method of preventing a threatened abortion. My meaning may be illustrated by an incident which occurred to me a good many years ago. I was house surgeon in one of the institutions on Ward's Island, and on one occasion the visiting surgeon, the late Dr. John M. Carnochan, brought with him to the island the celebrated English authority on nervous diseases, Dr. Marshall Hall, who was then on a visit to this country. At the time I had under my care a man who was suffering from violent convulsions, and Dr. Hall asked me how I was treating him. When I told him that I was applying sinapisms to the wrists and lower extremities and ice to the head and was purging him with croton-oil (the recognized treatment for convulsions at that day), he said to me, "Young man, let me tell you of an experience of my own. Not long

since in London I procured two puppies of equal size and appearance and poisoned them with large doses of strychnine. One of them I treated by keeping it in the light and making counter-irritation upon the external surface of the body by frictions, etc. This puppy died. The other I put down in a deep cellar which was perfectly dark and absolutely quiet, and left him without any treatment whatever. The result was that this second puppy got well."

There were thirty or forty students present, and he then gave a most interesting clinical lecture on the case mentioned, in which he dwelt upon the happy effects of *complete* rest and the adoption of sedative methods in conditions of excitation of the nervous system. The lesson which he taught made a most lasting impression upon my mind.

The proper way to treat a threatened abortion is, in my judgment, the following: In the first place, absolute rest, as far as attainable, should be insisted upon as regards the mind and nervous system as well as the body. The

room, which should be one of large size, should be kept darkened and in perfect silence and no one be allowed to enter it except the nurse (who should be secured at the earliest possible moment), and perhaps the husband if his presence tend to allay the anxiety of the patient. The patient should have complete freedom from all outside cares, and her diet should consist of only the simplest food, such as milk or beef-juice, so that her stomach may have almost nothing to do.

Is there any drug that will be of service under these circumstances? you ask. Yes; give her a full dose of opium, either alone or in combination. I am very fond of using a mixture which contains ten grains of bromide of sodium or potassium, six or seven grains of chloral, and one fifth of a grain of morphine to the dose, repeating it according to circumstances. Each of these agents produces quiet in its own way—the chloral inducing sleep, the bromide exerting its peculiar sedative effect upon the nervous system, and the opium hav-

ing that happy influence, which we all know so well, of robbing life of its cares.

The first thing of all to do, however, if the patient be bleeding freely, is to make use of a carefully applied tampon. When you come back to see her at the end of three hours you will probably find that she is in a sound sleep, and she will very likely sleep on for four or five hours. In twenty-four hours the tampon may be removed, but the patient should be kept perfectly quiet until all danger of a return of the trouble is over.

LECTURE V.

Treatment when expulsion is inevitable—Antisepsis in abortion—Danger of infection from faecal matter—The water-closet as a source of peril—The tampon *the* remedy in abortion—Opium and ergot both contra-indicated—How to make and apply a tampon—The removal of the tampon—Importance of removing whatever remains of the product of conception—Method of doing this—Treatment of putrid infection—Of septicæmia—Of pelvic abscess.

WE come now to the treatment of abortion in cases in which you have decided, in accordance with the rules laid down in the last lecture, that the process of expulsion must necessarily take place. Finding the abortion inevitable, you have no right to try any longer to stop it. It may in certain cases be delayed for days or weeks, or even months. The placenta, or some other portion of the uterine contents, may be caused to remain, but, by allowing such a thing to occur, you expose your patient to the imminent risk of death from putrid absorption.

What you want to do is to get the woman through with the abortion as quickly as possible, and to leave no nidus for bacteria in the uterus afterward. And this brings me to the subject of antiseptics, upon which I wish to say a few words to you.

About the importance of antiseptics in general, and the various methods and agents employed for carrying this out in practice, I can not, of course, stop to speak very fully. I take it for granted that every student of this college is already perfectly well informed on these points. I need only say that I am an enthusiast on this subject, and I trust that every one of you will be so too.

Even as to antiseptics in abortion, I can not go into details. I only want to fix in your minds the *essentials* to be remembered. You will find that many a man who conducts everything in a truly antiseptic manner when labor occurs at full term, will neglect the same precautions in cases of abortion. Yet it is just as important that he should be antiseptic in the

latter as in the former. At this time, as some German writer has expressed it, the uterus moults its mucous membrane as a bird its feathers; and what better culture fluid for noxious bacteria could you possibly have than this?

Let us glance at the general means for preventing the entrance and development of bacteria. In the first place, you must be thoroughly aseptic yourself. You should not come to a woman having an abortion, directly from a case of puerperal septicæmia, or other infectious trouble, with your person saturated with its poison. Your clothes, hands, instruments, sponges, and tampon (if you use the latter) should all be aseptic. It is essential, also, that the nurse should be thoroughly aseptic as to her clothes, her hair, her hands, and especially her finger-nails.

Next, the patient should be rendered aseptic as well. Even in women who have never suffered a laceration of the perinæum the distance between the vulva and anus is exceedingly short, and in those who have met with this accident

this normal distance is more or less diminished. Now, as fæcal matter—which is, as you know, highly septic—is repeatedly passing from the anus, you can readily appreciate how constant and how great is the danger of infection arising from this source. The best of the German authorities hold that it is through the vulva that puerperal septicæmia is ordinarily contracted.

It is of the utmost importance, therefore, that the vulva and anus should be thoroughly bathed with some antiseptic fluid. If bichloride solution be used, it should be of the strength of about 1 to 2,000.

I insist strongly on this point, for the reason that so little attention has been paid to the matter. You will not find it mentioned in any of the older books; but I feel assured that it will not be omitted in the next work on obstetrics. It is true now, as always, that we are mending the faults of yesterday by the wisdom of to-day.

Let me mention a case in illustration. Three or four years ago I was summoned to see, in consultation with an excellent and thoroughly

well-informed physician, a graduate of this college, a wealthy lady residing in a flourishing town some ten miles from New York. She had had a perfectly normal labor, but was now suffering from a decided attack of puerperal fever. I questioned the physician thoroughly upon every point likely to afford a clew to the origin of the trouble, but for a long time my efforts at finding out the source of difficulty were entirely unsuccessful. The doctor was constantly attending cases of midwifery, but had not had a single one in which there was any signs of septicæmia. In attending this lady he had taken the greatest care in regard to the condition of his clothing, his hands, and his instruments. The nurse also was thoroughly aseptic, and every possible precaution that he could think of was taken. Believing, as I do, that puerperal septicæmia is due to a special poison communicated from some septic source, I began to feel very much puzzled.

I inquired where the water-closet was, and found that it adjoined the lying-in chamber,

and that it was one of the old-fashioned pan closets still, unfortunately, so much in vogue. In speaking of these, Colonel Waring, one of our best authorities in matters of sanitation, says: "Everything looks like a whited sepulchre above, but below there is a chamber of horrors!" I lifted the pan, and a horrible odor assailed my nostrils! On further inquiry, I found that the patient had been in labor for twelve hours, and that during this time she had had three or four passages, each time going into the water-closet for the purpose. Now, at last, light began to break in upon the ætiology of the case. Just think of the position of a woman in the act of defecation or urination. With the downward pressure brought to bear, the labia are rolled out and the vaginal walls widely unfolded. Up from below, to come in contact with all this unfolded surface of mucous membrane, rise the emanations from the closet loaded with septic germs! Here was a woman in the pains of labor subjecting herself directly to the poison of the sewer-pipe, for

probably at least five minutes at a time, several times during the process of labor!

When I considered these circumstances I no longer felt any doubt as to the causation of the disease. Can you question the correctness of this opinion as to its origin when you reflect that the air and moisture that came in contact with the vulva and vagina were permeated with every factor instrumental in the production of puerperal septicæmia?

Strange to say, this danger is not referred to in any book or monograph in any language, so far as I am aware. It is therefore all the more important that you should get here the lesson which this and similar cases teach. That lesson is this: during abortion, or labor at term, never permit a patient to use anything but the ordinary chamber-vessel or commode for alvine evacuations!

I regard it as a point of the utmost importance. Up to the present day nearly all the best hotels in the city of New York are still provided with these old-fashioned pan closets, often im-

mediately adjoining the sleeping apartments ; and any lady who is taken with an abortion and uses one of them is exposed to the danger of which I speak. In dismissing this subject I may say that the patient whose case I have narrated finally recovered, although for a time she was at death's door, and for months afterward was ill with the worst sequelæ of puerperal septicæmia.

Suppose that the abortion is going on, and that the woman is losing large quantities of blood. What is to be done ? You feel that you can not spare the time to remain all day to look after the case, and yet it is manifestly risky to leave the patient. Under these circumstances have we any efficient remedy which can always be depended upon ? When you hear of a large number of remedies for any affection you may rest assured that there is, strictly speaking, *no* remedy for it. This is the case, for instance, as regards whooping-cough, for which there is no specific. But we have a specific remedy for malarial fever and we have

one for syphilis. So, too, we have a remedy for abortion, and that is the tampon! This is the one great remedy, and it will serve you well. In the early period of abortion there is but one danger; that is hæmorrhage. When you have properly applied an efficient tampon you can leave your patient in perfect security. The tampon controls the bleeding entirely, and allows the process to go on to a successful termination without danger.

When you return to the house six or eight hours afterward the patient will often tell you that she feels perfectly well. From the nurse you learn that there has been no hæmorrhage whatever, and when you come to take away the tampon you will perchance find following it the entire fœtal shell, unbroken if the period is early in utero-gestation, or the fœtus with the membranes and placenta if later. You then have the vulva bathed, not using a vaginal injection, and apply an antiseptic pad.

But, you may ask, if the patient suffers much pain before the expulsion of the fœtus,

should we not relieve it with opium? Certainly not. These pains are just what are requisite to complete the work of expulsion, and should not be interfered with. You might as well fasten a ball and chain to your leg when you are about to start to run in a race! Neither, on the other hand, should you use ergot. To do so while the os is still undilated would be entirely unphilosophical, as I have had occasion to remark previously. What, then, should you do for the patient? Nothing whatever if the tampon is properly applied! It is highly important that you should remember that the tampon is *the* remedy in abortion, and in the vast majority of instances it will do its work in a perfectly satisfactory manner. With the tampon in position, you may go about your work, feeling perfectly at ease. Your main duty consists in *not* interfering. Nature is perfectly competent to carry on her work to completion without your aid.

Let me teach you how to make a tampon. Get some good cotton or cotton batting, and

divide it into twenty-five or thirty flat pieces, two and a half or three inches in diameter. Then prepare some carbolic-acid solution, of the strength of about five per cent—the most convenient way of doing this is by the use of the tablets which you can find in all the shops—and, having put a number of your pieces of cotton into it, boil it thoroughly. In carbolic acid and the boiling process you have two of the best antiseptics known to science. Care must be taken, however, not to have the antiseptic solution too strong.

When you are ready to apply the tampon, have a table brought to the side of the bed, with a pillow and blanket upon it. The patient should lie upon this table in the Sims position, with one arm thrown back so that the left pectoral muscles touch the table. The best material for the packing of the upper part of the vagina is iodoform gauze; but if this can not be obtained, use some of your antiseptically prepared cotton, after first squeezing it as dry as possible by putting it between the folds of

a towel and forcibly slapping it. If the os be open, stuff some of the dressing into it; then you should pack the posterior *cul-de-sac*, and then the anterior *cul-de-sac*. This should all be done with iodoform gauze, if you can get it; and below this you pack in three or four pieces of antiseptic cotton for the purpose of keeping the upper dressing in place and protecting the vagina from septic influences. It is not bacteria in general which are likely to do harm, but a particular form of microbe, known as the *streptococcus*, which is believed by most authorities to be the causative agent of puerperal septicæmia. I have yet to see from this method of treatment one solitary case of poisoning from carbolic acid, though I would particularly impress upon you the necessity of beating out the cotton wet with the solution as dry as possible. In these cases I usually employ mercuric bichloride as an antiseptic, but I prefer to recommend carbolic acid for general use in a course of lectures like this.

When you remove the tampon it is well to

use cotton soaked in carbolic solution for cleansing the parts rather than sponges; especially as it is sometimes difficult to get good sponges. Having done this thoroughly, you can put in a new tampon, if this be necessary. The vulva may be washed with bichloride solution, but it should at once be wiped perfectly dry, for the bichloride, if left long in contact with the external parts, is very apt to give rise to eczema of the most violent character. If you employ this agent you should then bathe the vulva with a five-per-cent solution of carbolic acid or creoline, and apply an antiseptic pad consisting of carbolized cotton.

This, held in position by a bandage connected with one passed around the waist, prevents the access of air, or at least renders the air aseptic.

In the great majority of instances you will thus have brought your case of abortion to a successful conclusion. Let us suppose, however, that you fail in this, the foetal shell or some portion of the membranes or placenta still

remaining in the uterus after the expulsive pains have ceased. You wait three or four days, and still the process of emptying the uterus has not been completed. In the meanwhile all pain and all hæmorrhage have stopped, and the patient feels perfectly well. There is, in my opinion, nothing more censurable in medicine than "making mountains out of mole-hills"; but in this case, while everything appears to be entirely normal and there is nothing in the outward appearance of the patient to excite the slightest suspicion of alarm, the woman is really in imminent danger until the uterus has been thoroughly and completely emptied. There is no question in my mind about the propriety of at once removing whatever remains of the product of conception. By leaving it retained in the uterus you will be exposing the woman to great risk. There could be no better nidus for the development of putrid intoxication or puerperal septicæmia, and if she recover, it will be in spite of your criminal negligence. It is

simply a death-trap that you leave within the uterus!

Under these circumstances do not consult the friends; do not ask for a medical consultation! After labor at full term you would not think of allowing a retained placenta to remain; and there is no reason why you should act differently now. You should tell the patient and her friends that the after-birth has not come away, and that it is necessary to remove it. If their consent is withheld, the responsibility of the case is with them. There will rarely be any difficulty about the matter, however, when you have fully and frankly explained the circumstances.

Having placed the patient on a table in the Sims position, and an anæsthetic (preferably ether) having been administered by an assistant, the speculum is held by the nurse, or other attendant, and the vagina swabbed out with a 1-to-2,000 bichloride solution. Then, with a tenaculum firmly hooked into it, you pull down the posterior lip of the cervix and remove the

retained secundines with an ordinary large curette. In the mean time if pressure be made over the fundus by one of the attendants, you will be amazed to find how quickly the uterine contents will roll out.

If the os be not sufficiently dilated for the purpose, you must stretch it more widely open by means of Goodell's dilator, which acts on the principle of a glove-stretcher. You need not be afraid that this will do harm. You will sometimes need a small pair of forceps to assist in withdrawing the foetal shell when arrested by the internal os. After the uterus has been completely emptied you should wash out its cavity with bichloride solution or carbolized water by means of a catheter or, better, by Lyman's irrigator, attached to the tube of a fountain syringe and carried to the fundus. With the Lyman instrument there is no danger whatever of the fluid being forced into the Fallopian tubes.

Ordinarily, you will have no further trouble with the case. But let us suppose that putrid

infection should ensue; which, you will remember, is quite a different matter from puerperal septicæmia. Having removed all retained secundines in the manner already described, you should carry a stream of warm carbolized water (say at a temperature of from 104° to 106° F.) up into the uterus by means of a fountain syringe. If you have no fountain syringe, use an ordinary Davidson syringe, and if you have no Davidson syringe, take some rubber tubing and make a siphon of it, immersing one end in a bucket containing the antiseptic fluid placed at a suitable elevation.

If the case be one of true septicæmia, put the patient on a table and with the curette go to the fundus and completely clear out the uterine cavity of everything in it. If it contains nothing else, it will be sure to have some of the flaking *decidua vera* upon its walls, for every uterus that has not been scraped has after abortion a certain amount of this material in it.

Then wash out the cavity as in the other

case, and you will, as a rule, soon see good results.

If you leave the uterus unemptied you allow a nidus in which the deadly streptococcus may flourish. Your antiseptic washes will do but little good unless you first remove the dead membrane, which prevents them from acting directly on the uterine walls. Any pieces of the foetal shell or of the placenta that remain should also be taken away, and there is nothing better for this purpose than the curette. Be sure that you scrape the whole surface of the cavity, and if you can not get well up into the horns with the ordinary large curette, take a smaller instrument for this part.

What pathological danger now most prominently threatens your patient? She may possibly have tetanus, or embolism, or suppurative arthritis; but these conditions are so rare as to be only the curiosities of abortion, and it is therefore sufficient that you should be aware of the fact that such affections do occasionally result.

Before the patient gets well, however, she may have further trouble still. You may find her perhaps complaining of pelvic pain, with a pulse of 120 and temperature of 103° F., and discover that she has had a violent chill. On making an examination you may find on one side, between the layers of the broad ligament, a mass of considerable size which may or may not yield a sense of fluctuation. This is a "phlegmon," or areolar inflammation. The condition is very common following abortion. Whenever you find a mass the size of a hen's egg which has formed in the pelvis within ten days after abortion, you may feel pretty confident that it contains pus. It is easy to open such an abscess, but you will find great difficulty in securing drainage. The trouble is to keep the wound in the vagina open. Let me show you a very simple drainage-tube which I have used for years with very satisfactory results. The vagina should first be washed out with a carbolic solution. Then, an assistant making pressure on the tumor from above,

the patient lying upon the back, you should place your finger upon its lowest point in the vagina. Taking care to avoid any arteries (which can readily be felt), you now slip the point of a pair of long, curved scissors along the finger and "gnaw" your way into the mass, without cutting. When absence of resistance tells you that you have got to the centre of the mass, pus will flow out. Now for our drainage-tube. Taking an ordinary soft-rubber tube, I cut it down for a short distance on either side, say about one inch, making two lips of equal size. With a needle a thread is then passed through the center of the tube, through the lips on either side, and through the tube again, a short distance below, and then tied in such a manner as to hold the lips at right angles, but with sufficient looseness to allow them to close when resistance is encountered in making traction upon the tube. When the drainage-tube thus prepared is to be inserted, the two lips, bent downward, are grasped with forceps and the

tube is carried up into position. When the forceps are withdrawn, the tube will be held in place by the gaping lips, which rest lightly on the edges of the wound; and when you wish to take it out you have simply to make traction upon it, when the resistance encountered from the edges of the wound will cause the lips to close, and the tube will readily slip out.

LECTURE VI.

Remote results of abortion—Uterine hydatids—Suppurative arthritis—Tetanus—Melancholia—Septic peritonitis—Chances of error in connection with abortion—Twin conception—Extra-uterine foetation—Uterine hydatids—"Molar pregnancy"—Difficulty of the diagnosis of pregnancy—Artificial production of abortion—Deception on the part of patients—Necessity for a consultation before inducing abortion—Indications for the artificial induction of abortion—Methods of producing abortion—Improper methods—Danger of uterine tents—The best method.

IN the last lecture we spent some time in considering the immediate results following abortion. Let us now glance at some of the more remote ones. Among these, as I have told you, uterine hydatids may occasionally be met with. This condition is simply the result of cystic degeneration of portions of retained chorion. The conduct of the case is simple when once the diagnosis has been made; and, as in the case of tape-worm, the diagnosis can

only be established by ocular demonstration. To determine the presence of tape-worm it is essential that some portion of the parasite should be seen; and to make out the diagnosis of hydatids it is necessary that some of the hydatids should be seen. Having once made the diagnosis, you have only to empty the uterus as you would in the case of any other retained matters.

Next, as to suppurative arthritis. Pathologists are still at variance as to the distinction between pyæmia and septicæmia. I think that we are safe in saying that septicæmia is a condition which, if it continues long enough, may end in pyæmia. As a result of the former, septic embolism is apt to occur in the small vessels of the liver, lungs, spleen, and synovial cavities, and pyæmic abscesses may form in the joints. In such cases we have simply a septicæmia which has terminated in thrombosis and embolism. The best treatment for suppurative arthritis I believe to be the opening of the affected joints, under strict antiseptic precautions.

In regard to tetanus I have nothing to say. It is a very rare result, and when it occurs it should be treated in the same manner as tetanus due to any other cause.

We come next to melancholia. It is probable that many will be inclined to dispute this condition as one of the results of abortion; but I have seen melancholia (sometimes of a very severe grade) following abortion sufficiently often to feel convinced that this is one of the sequelæ that should be apprehended. As to the treatment of this condition, I can only refer you to works on mental disease, in which the management of melancholia in general is fully considered.

Finally, we come to septic peritonitis. In abortion women sometimes die of hæmorrhage, and, as a rule, though not invariably, this occurs in criminal abortion. Again, the woman may die in consequence of air getting into the veins. The vast majority of deaths, however, occur from puerperal septicæmia. How, then, shall this condition be treated when met with?

By two means, and only two. As soon as the diagnosis is made, put your patient in the Sims position, and, having etherized her, with thorough antiseptic precautions clear out the cavity of the uterus with a dull wire curette. In order to do this satisfactorily it will probably be necessary to dilate the os; but this can be accomplished with perfect safety in a few minutes by means of the divulsor. You should use, first, a large curette, and then a smaller one, so as to get well up into the cornua, and, if possible, even into the entrance of the Fallopian tubes. Then, by means of the douche which I showed you at our last meeting, wash out the uterine cavity with creoline, carbolic-acid solution, or a weak bichloride solution. I would not advise you to use the bichloride in the uterine cavity stronger than in the proportion of one to three or four thousand.

If you have curetted thoroughly, you will be surprised to find how quickly the temperature will come down as soon as you commence the douche. Having thus reduced the tem-

perature, you should treat the case according to the conditions present, bearing in mind the general principles which have been previously laid down.

We pass now to the consideration of certain chances of error which may arise in connection with abortion, and at the outset I will remark that I want you to remember always that even the best of men may sometimes be deceived.

A woman has an abortion, say, at the end of the third month. The foetus and the placenta come away, and the *decidua vera* is carried off in the lochial discharge that follows. The uterus has apparently cleansed itself thoroughly. When her next period arrives, however, the woman does not menstruate; and this is the case at the next period, and the next. At the end of six months, she is delivered of a fully-developed living child. Now if you, as the medical attendant, are not prepared for this contingency, you may be placed in a very false position. I have had such a thing occur no less than three times in my own experience.

Under these circumstances the friends of the patient will be very likely to inform you, with an air of superiority, that she never had an abortion at all. The explanation of this is, that one of a pair of twins has been cast off and the other has gone to full term.

I can tell you a worse case than this, however. A woman has an abortion, and the foetus is cast off with all its membranes entire. Under the circumstances, you naturally congratulate your patient on the happy result of her trouble. In a month, however, you are sent for in great haste, and you arrive to find, to your horror, that the woman is *in articulo mortis*. A few minutes more and she dies in collapse. An examination shows that, in addition to the foetus *in utero*, there has been an extra-uterine one, and the fatal result was due to rupture of the Fallopian tube.

There are two other contingencies, also, which may place you in a false position. One is the following: The foetus is cast off, and you think that all the membranes have come away

also. The next month, however, the patient does not menstruate, and then you say that there has been a twin conception, and while one of the *foetuses* has been expelled the other still remains *in utero*, and will probably go to full term. About the end of the ninth month, sure enough, the uterus does begin to contract; but, instead of a living child being delivered, a bucketful of *hydatids* is cast out. These little cysts of the chorion cling to the uterine walls as ivy clings to the oak, and they go on developing and multiplying to such an extent that the cavity becomes more and more enlarged to accommodate them, and not infrequently the uterus grows to the size of the organ at full term.

The other contingency is this: The *foetus* is cast off, and with it comes a considerable quantity of blood. You examine the clots and find portions of the *secundines*, and you are therefore induced to tell the patient that everything is over. The fact is, however, that the lower portion of the *foetal shell* has given

way and the fœtus has come out, with a small portion of the membranes; leaving the remainder of the shell still *in utero*. This shell may remain for months or years, constituting what is known as a "molar pregnancy." In one instance I knew it to remain for twenty years, the mass in the mean time having undergone calcareous degeneration.

You will find in the community in general very positive ideas regarding pregnancy. People think that a medical man ought to know at once whether a woman is pregnant or not, under all circumstances. In fact, however, the diagnosis of pregnancy in the early stages is often one of the most difficult that the physician is called upon to make. Still further, it is by no means always easy to make the diagnosis even at a later period; and every now and then a pregnant uterus is cut down upon, under the supposition that it is an ovarian tumor—often by most excellent and careful physicians.

We now come to the consideration of the

question of the artificial production of abortion.

In regard to bringing on abortion artificially you will have to be constantly on your guard, or else you will sometimes be imposed upon. All women may be divided into two great classes—those who desire to bear children, and those who do not. It is among the latter class that you will have to look out for deception. For instance, individuals of this class have been known to take small and repeated doses of tartar emetic in order to produce such constant and violent nausea and vomiting that the physician felt called upon to bring on abortion to save the patient's life, as he supposed.

Here let me give you one rule which I have always followed and which—although I have practiced medicine for thirty-five years, and naturally have some confidence in my own judgment—I still follow at the present time. This rule is, *Never induce an abortion without first having a consultation.* You may per-

haps ask me why. Remember, in the first place, that a human life depends upon your decision. It is better, therefore, that the responsibility should be shared. He who can take a human life into his hands without a desire to thus have the responsibility divided is not, in my opinion, a man of proper feeling.

If the physician whom you consult does not agree with you that abortion should be produced, the pregnancy may be allowed to go on; but if he does agree with you on this point, your position is naturally very greatly strengthened. Such a course as I have recommended is in the interest both of the patient and of the medical attendant.

Let us next inquire what are the indications for the artificial induction of abortion. In a general way, it may be stated that whenever it is felt that the prolongation of pregnancy is going to destroy the life or intellect, or to permanently ruin the health of a patient, abortion should be brought on. It is a well known fact, for instance, that a large number of pa-

tients die every year from the vomiting of pregnancy. It was to this condition that the gifted Charlotte Brontë, who married somewhat late in life and who was believed to be suffering from acute gastritis, unfortunately fell a victim. As I have indicated, you will have to be on your guard against deception. Many women will either use drugs to produce vomiting, or else they will suffer from nausea only when the physician is in the room. Such women generally influence their husbands at will, and you must get the evidence of a trustworthy nurse, or of friends who are not under the influence of the patient. Then, again, the general character of the vomiting, and the condition of the patient, will assist you in deciding whether her sufferings are real or not. When you find that the obstinate vomiting is a reality, and it seems probable that the woman will die if she is not relieved, it will be nothing less than criminal not to bring on abortion. In such cases it is astonishing to see how quickly the symptoms are relieved and the patient be-

gins to improve in every way, when the uterus has once been emptied of its contents.

But there are other conditions besides uncontrollable vomiting which call for artificial abortion. There is some peculiar influence over the kidneys exercised by puerperality, the nature of which we do not know. It is a fact, however, that a great many women die annually of puerperal nephritis. As a rule, such nephritis does not begin until after the fourth month, but in exceptional cases it occurs even earlier than this; or, possibly, the patient may have had desquamative nephritis before the commencement of pregnancy. I can not but regard it as cruel to allow a patient with marked symptoms of this affection to go on in utero-gestation, with the imminent risk of dying in labor of puerperal convulsions, or, if she does not die then, of being doomed to chronic Bright's disease with its attendant suffering and dangers.

In the next place, if you have a pregnant patient with cardiac disease of such a character that you think her life is in danger, it is

your duty to induce abortion. If she should have cancer, or be in the third stage of phthisis, you should not do this, because, in the first class of cases, you have two lives to consider, as the woman may have a long life before her, while in the last it is impossible that she should live under any circumstances.

The fourth condition which I would mention is chorea. In one case only in my experience have I had to induce abortion on account of this affection. The trouble was so violent that I feared the patient would die before the end of gestation, and I therefore brought on abortion at the end of the fourth month.

Fifth, when the pelvic diameters are very much contracted, so as to render delivery at full term absolutely impossible, the uterus should be prematurely emptied.

While acknowledging the improvements that are constantly being made in the management of the Cæsarean section, Porro's operation, and similar procedures, I still do not believe that, when we can avoid it by inducing abortion, we

are justified in subjecting our patient to the great risk attending these operations even under the most favorable conditions.

Sixth, in case of violent convulsions from any cause whatever, abortion is indicated. It makes no difference whether the convulsions are choreic, uræmic, epileptic, or of any other character except hysterical. Even if you succeed in controlling the seizures for the time being, it is entirely improbable that the woman can go on for five months, or more, longer without a return of the trouble, and most likely in a form so aggravated that death will inevitably result.

Seventh, artificial abortion is called for sometimes on account of uncontrollable uterine hæmorrhage. Placenta prævia is a condition which does not occur at the early period of pregnancy which we are now considering, and the hæmorrhage to which I refer is occasioned by the separation and sliding away of the *decidua reflexa* from the *decidua vera*. After styptics and the tampon have been given a thorough trial, and the trouble still continues,

there is nothing left for us but to bring on abortion; for, if this is not done, the most serious results will almost certainly ensue.

In this enumeration I do not pretend to give you all the conditions which may from time to time call for this measure. I only aim to show you some of the principal ones, as they have been met with by me in actual practice, and to point out to you the general principles which should guide you in deciding whether in any case of serious difficulty that presents itself you ought to resort to artificial abortion.

The next step naturally is to consider the methods by which abortion is brought on; and the procedures which I mention first I only refer to in order that you may carefully avoid them. The first method is to introduce a metallic sound into the os uteri, and push it forcibly through the foetal shell. If there be a brutal and stupid method of inducing abortion, it is certainly this. Yet it is done every day, and is the one commonly practiced in criminal abortions. There is no doubt whatever about its killing the foetus,

but, after the latter has been killed, its dead body is left to rot in its shroud. You must understand that when I call this procedure brutal I do not mean that it is brutal to the patient at the time, for she experiences no pain whatever from the piercing of the foetal shell; but that it is brutal in its results, since the foetus may remain in the uterus for three months, or longer, and during all this time its presence there is attended with the most imminent risk of putrefaction and septicæmia.

The second method is to take a tent of sponge, sea-tangle, or tupelo, and, by introducing it into the *os internum*, cause dilatation of the cervical canal, and thus excite the uterus to contract and bear down upon its contents. This is perhaps a little less brutal than the other, but only slightly so. It is impossible to prevent the entrance of bacteria in the use of any kind of tent whatever. Not long since my colleague, Dr. Chambers, had some sea-tangle tents prepared with every antiseptic precaution, but, notwithstanding this, they were

afterward found to teem with bacterial life under the microscope.

Let me here digress a moment to say a word in regard to sponge tents. I never use them now under any circumstances whatever, and regard them only as something connected with ancient history. They have been superseded by other and better devices, just as the stage-coach and whale-oil have been superseded by the railway and by gas and the electric light. The stage-coach and the oil answered well enough as long as we had nothing better; and just so it has been with the sponge tent. At the present day these tents ought not to be used in puerperal conditions, and indeed, I think, not even in non-puerperal conditions. I have seen several deaths due to this cause. Now, mark you, I myself have employed them up to two or three years ago; but formerly I also used to travel by the stage-coach and read by the oil-lamp. I no longer use tents of any kind, however, because there are much better and safer means

at hand for accomplishing the same purpose.

The third method is to take some instrument like the uterine sound and, slipping it carefully up into the uterus and along its wall, gradually separate the *decidua reflexa* from the *decidua vera*. There is not a great deal of danger connected with this procedure, and it is the only one of these defective methods of inducing abortion that I would advise you to adopt under any circumstances whatever. It is much less objectionable than the others, because when you have thus separated the two membranes from each other you still have a living foetus left, and at the same time your manœuvre has excited uterine contractions which will ordinarily result in its expulsion. Still, I would not make use of this method myself.

Next, I may mention, in passing, the use of certain drugs, such as ergot, savin, pennyroyal, viscum album, or mistletoe, and the root of the cotton-plant. These are things which the

charlatan might resort to, and which are commonly employed by ignorant women; but no scientific physician would ever think of placing any dependence upon them whatever. The effect of such drugs is to excite the uterus to tetanic spasms while the os is undilated and the whole organ totally unprepared to perform the work which is expected of it. To make use of them is like driving a spirited horse up to a closed gate, and still urging him to go on when there is no way to get through it.

Now, having spoken in this disparaging way of the various methods commonly in vogue, you will naturally expect me to show you some better way; and this I will try to do. These are the methods which have come down to us from the past; the one to which I will next call your attention is of modern origin, and entirely in accord with the best scientific teaching of the day, as regards the all-important matter of antisepsis.

Let us suppose that you have a patient at the end of the third month of pregnancy in

whom exist conditions which, in your opinion, call for the immediate induction of abortion, and that the physician whom you have called in consultation agrees with you as to the propriety of this procedure. It is important that the abortion should be brought on promptly. How shall you set about it? In this way. Anæsthetize the patient with ether, not chloroform, and place her on a table in the Sims position. The vagina, vulva, and anus having been thoroughly cleansed with carbolized water, take a sponge saturated with bichloride solution (1 to 2,000), and with it fill the vagina with the solution. By this means the os will be placed in a lake of the antiseptic fluid. But may not the bichloride poison the patient? Well, I have never yet met with this accident; but, even if the mercury should affect her system to some extent, the dose will not be sufficient to kill her, and it is better to run this slight risk rather than expose her to the danger of septic infection.

Next you catch the cervix with a little te-

naclum and dip it below the surface of the bichloride solution. You will thus perceive that this is a subaqueous operation, and on that account it is as free from the risk of being attended with untoward results as it is possible to make it. With a divulsor of small size you stretch the cervical canal as far as you can in all directions. About three minutes is taken up with this procedure, and you then introduce a larger divulsor and stretch the canal still further. If it is at the end of the third month, and the divulsion has been successful, you can now carry your finger through the cervix. You next introduce a glass plug, of larger or smaller size, according to circumstances, such as I show you here, and which is as large as the index or the little finger, as the case may require. Having gotten this well up into the cervix, you pack the vagina with iodoform gauze, and then apply a tampon in the manner already described to you. This is all you have to do; and, having done it, you can go home and leave the case to nature.

Within twelve hours the woman will probably have pain, and this is the first symptom of abortion under these circumstances. Very likely she will then vomit, and this is the second symptom. Finally, a little blood will probably ooze through the tampon, and this is the third symptom.

The plug and the tampon may be left in position for from thirty-six to forty-eight hours. When you remove them you can, if necessary, stretch the os again, and put in a larger plug, sustaining it with iodoform gauze, as in the case of the first one. You need not be anxious to hurry the labor-pains. They will come on fast enough, and the plug will probably be at last forced out by the contractions of the uterus. Behind it will come the product of conception, and then the whole thing will be over. This is all that I ever do now in these cases of artificial abortion, and I am satisfied that you will get good results with this method when you come to practice it. I know also that you will avoid the bad results that are so apt to fol-

low the old methods which I have mentioned to you.

I did not mention to you that the plug to which I have made allusion is about an inch and a half in length, and provided with a broad shoulder, which prevents its entrance into the uterine cavity, while the tampon keeps it perfectly in position in the cervical canal. The following figure represents its shape and medium size.



Where the case is quite urgent, I never hesitate to use the divulsor, and with forceps or large curette at once to remove the entire foetal shell. I have done this about a dozen times I think, and so far have had no bad result from the practice.

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